

Application No. 09/671,804
Amendment dated November 25, 2003
Reply to Office action of September 8, 2003

Remarks:

With respect to the Claims:

Claims 1 – 10 were withdrawn in an Amendment filed on 07/28/2003, but the right is reserved to present them in a divisional application. Claims 11 and 15 have been amended. Claims 21 – 26 are new.

As background to these remarks, withdrawn claims 1 – 10 were directed to an embodiment that used a laser engraver. Claims 11 – 20 were directed to an embodiment that uses a photopolymer method. The photopolymer method was added to this non-provisional application as a commercial fallback (see paragraph [0096] on pages 19 – 21) and no search was done on the photopolymer method as such. Applicants had a general knowledge of the method as reflected in the application, but no specific prior art reference. (At the time of filing, the Brother one-at-a-time stencil stamp making apparatus appeared to be the closest in concept.) Thus, claims 11 – 20 were filed without having in view the patent applications found by the examiner, principally Kuriyama et al. (U.S. pat no. 5,669,304).

Applicants still believe that claims 11 -20 as amended on July 28, 2003 are patentable over the prior art cited by the examiner. However, after further consideration, it appears that there are additional differences between this application and the cited art. Chief among these is the location of the photonegative that was brought out during the November 13, 2003 interview with the examiner. The parties agreed that applicants' photonegative is in physical contact with the photopolymer to produce sharp images. In contrast, Kuriyama et al. disclose in FIGs. 3 & 4 a transparent cover (72) between their photopolymer and photonegative.

Kuriyama et al. do not provide dimensions and one cannot assume that their drawings are to exact scale. However, since FIG. 4 discloses a stock (71) for a hand stamp, it would be clear to one of ordinary skill in the art that a typical dimension would be one or two inches. The transparent cover (72) is obviously a structural element having a thickness of, perhaps, 1/8 inch. This is an order of magnitude greater than photonegative films that are well known in the art to be about 0.008 inches or less. Thus, the distinguishing characteristic is that the present invention does not have an intervening relatively thick structural element between the photopolymer and photonegative.

Although allowable as a claim format when clear, rather than use a negative limitation, e.g., "without intervening structural element," a positive limitation "and forming a liquid tight planar boundary for said cavity" has been added to step b) of claim 11. This liquid tight boundary is illustrated in, e.g., FIG. 14 of this application and discussed in paragraph [0099] on pages 20 – 21. Page 20, line 29 states that the photonegative covers the "bottom" in liquid-tight fashion, but the photopolymer is so viscous that orientation of the device is not critical, so planar boundary is "used instead."

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In addition to the limitation above to claim 11, dependent claims 21 – 26 have been submitted which modify steps b, c, and d in claim 11.

In step b) inserting an additional transparent film between the photonegative and the photopolymer would produce almost the same result and not defeat the purpose of having the photonegative as close as possible to the photopolymer, if it were thin enough. This is disclosed in FIG. 1 of Kawatsuji et al. (U.S. pat. no. 5,275,919) found by the examiner. They use a cover film (3) over a negative film (2), presumably to protect the negative for reuse. When this application was filed, before Festo, it is believed that inserting a thin cover sheet would have been an insubstantial difference covered by the Doctrine of Equivalents. Now this is not so clear. Thus a dependent claim has been added to literally claim the addition.

This application does not literally describe use of a cover film. Paragraph [0097] on page 20 describes a transparent film (line 10) and using two laser-printed sheets in series (line 15). It is believed that someone with ordinary skill in the art would understand that making one of the sheets completely transparent would be encompassed by that description.

In step c) the method of filling the cavity without forming air bubbles is also different from the prior art. This is illustrated in FIG. 16 of the present application and discussed in paragraph [0101] on page 21. As the figure illustrates, the exit hole is diagonally opposite the injection hole. From page 21, line 18, it should be clear that to avoid entraining air in a circular die, the two holes should be diametrically opposite and for other shapes substantially opposite.

In step d), exposing both sides of the photopolymer is illustrated in FIG. 17 and discussed in paragraph [0102] on pages 21 – 22. This is apparently common in the prior art, but Kuriyama et al. do not do this. FIG. 3 illustrates their stamp forming apparatus with a single ultraviolet irradiation source (63) in front of the transparent cover (72a).

Claims 21 – 26 contain the six possible combinations of these three additional limitations depending from claim 11.

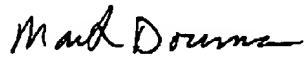
Claim 15 has been changed from “two identical of said photonegatives” to “at least two identical of said photonegatives.” Conceivably, someone could achieve the same objective of producing a denser negative using three thinner negatives, for example.

With these amendments, the application should be in condition for allowance and that action is earnestly solicited.

If the examiner believes this submission is not responsive to the examiner's final Office action, it is respectfully requested that the examiner call the undersigned as soon as possible.

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Appendix: Substance of 11/13/2003 Interview with Examiner:

The following is applicant's summary of an interview with the examiner held in his office on November 13, 2003 between examiner Stephen R. Funk, inventor Alexander C. Wall, and inventors' agent Mark Douma. The interview was at the request of the applicants and the opportunity is gratefully acknowledged. Wall brought several samples and explained substantially as follows:

First, the hand marking stamp industry customers consists of commercial establishments that order a number per year and can wait for delivery and individual consumers who order one or two per year. For the consumer market, there is a need for a method that could work in a retail environment and deliver a durable quality stamp while the customer waits a short time, e.g., five minutes. An inexpensive machine requiring little training is required. In these respects, Kuriyama et al. (U.S. pat. no. 5,669,304), the chief reference cited by the examiner in rejecting claims, has the same objective. However, a process that requires washing in hot soapy water and produces liquid waste for disposal is not possible in a retail setting.

Wall showed samples of prior art sheets of cured photopolymer about 1/8 inch thick having a solid back and, on the front, an array of 1 x 2 inch type dies with raised characters. (These sheets had already been washed of uncured photopolymer.) The sheets would be cut into individual type dies and glued to stamp platens.

To show how his type dies could be attached to a stamp platen without an adhesive, Wall gave examiner Funk a small rectangular solid of cured but unwashed photopolymer to illustrate how tacky it was. It was tacky enough so that the examiner had to engage in some manipulation to release it back into its box.

Wall then showed a mock up of his invention as illustrated in FIGs. 12 - 15 of the instant application. This was a 1/8 inch thick metal plate having a rectangular cavity about 1.6 inches long by 0.6 inches wide. The top and bottom were covered by thin transparent sheets. This mockup did not have a hinge, but used two C-clamps to hold the transparent sheets against the cavity. Wall illustrated how it was possible to fill the cavity without creating bubbles by injecting liquid photopolymer through a hole in the side of the cavity at one corner until it filled the cavity and emerged from a hole at the opposite corner.

Wall then explained that to make a stamp, one needed to put a photonegative inside the transparent cover nearest to the photopolymer. If the photonegative is not against the photopolymer, then one does not get a sharp image.

Wall showed a mockup of Kuriyama et al.'s stamp forming unit (7), as illustrated in their FIG. 4. Wall had constructed the liquid resin encapsulating section (73) from 1/8 inch thick transparent plastic plates to form an inside cavity 1.6 inches long by 1.3 inches wide by 0.75 inches deep. In the mockup, the stamp stock (71) comprised two wooden pieces: a 1.6 x 1.3 inch standard wooden stamp stock 0.6 inches thick and a two inch long standard cylindrical handle.

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However, Wall reported that, when he filled the encapsulating section (73) with liquid photopolymer and exposed it through the bottom covered with a typical photonegative, he was only able to get bits of cured rubber floating in uncured gel. He theorized the transparent portion of a typical photonegative would be only about 20-30% of the surface and light coming from one side only would not cure much of the photopolymer.

At this point, the examiner expressed an appreciation for the difference between this invention and that of Kuriyama et al.'s. The most important difference is that, in this invention, the photonegative is inside. Referring to Kuriyama et al.'s FIG. 3 that shows a cross-section of their stamp forming apparatus (1), the examiner noted that their photonegative was a looped ribbon film (52) on the outside of the cover (72) rather than inside. Requiring that their ribbon go inside would defeat the purpose of their apparatus.

The examiner recalled that originally claim 11 (the only independent pending claim) recited placing the photonegative "in" the cavity. Because the figures did not show the photonegative in the cavity, "in" was changed to "optically adjacent to." If "optically adjacent" could be clarified to distinguish over Kuriyama et al., then that claim would be allowable.

If the applicants could propose claim language, then the examiner would update the search with respect to a stamp making device having a photonegative in contact with the photopolymer.

The examiner also stated that normally he could accept additional dependent claims.

Applicants agreed to submit amended claims.